

Claims

We claim:

- 1 1. A method of converting interlaced video signals to progressive video signals,
2 said method comprising:
 - 3 a) receiving an interlaced video signal representing a luma component
4 specifying luma lines and a chroma component specifying chroma lines, wherein
5 said chroma component specifies approximately one-half the number of lines of said
6 luma component;
 - 7 b) decoding said interlaced video signal and increasing the number of
8 said chroma lines to approximately the same as the number of said luma lines;
 - 9 c) decreasing the number of said chroma lines of said interlaced video
10 signal back to approximately one-half of the number of said luma lines, whereby said
11 increasing of chroma lines is substantially reversed;
 - 12 d) deinterlacing said interlaced video signal, whereby said deinterlacing
13 results in a progressive video signal representing a luma component specifying luma
14 lines and a chroma component specifying chroma lines; and
 - 15 e) further processing said progressive video signal.
- 1 2. The method of claim 1, wherein said step (e) comprises making substantially
2 equal the number of said luma lines and the number of said chroma lines of said
3 progressive video signal.
- 1 3. The method of claim 2, wherein said step (e) further comprises vertical format
2 converting said progressive video signal for displaying on a display having a vertical
3 resolution different from that of said progressive video signal.
- 1 4. The method of claim 2, wherein said step (e) further comprises providing said
2 processed progressive video signal to an imaging system.
- 1 5. The method of claim 4, wherein said imaging system comprises a liquid
2 crystal on silicon imager.

1 6. The method of claim 4, wherein said imaging system further comprises a high
2 definition television receiver.

1 7. The method of claim 1, wherein said interlaced video signal of said step (a) is
2 a 4:2:0 formatted video signal.

1 8. The method of claim 1, wherein said step (b) results in an interlaced 4:2:2
2 formatted video signal.

1 9. The method of claim 1, wherein said step (c) results in an interlaced 4:2:0
2 formatted video signal.

1 10. A method of converting interlaced Moving Picture Experts Group (MPEG)
2 video signals to progressive video signals, said method comprising:
3 receiving an interlaced 4:2:0 formatted video signal;
4 decoding said interlaced 4:2:0 formatted video signal and converting said
5 video signal to an interlaced 4:2:2 formatted video signal;
6 re-converting said interlaced 4:2:2 formatted video signal to an interlaced
7 4:2:0 formatted video signal; and
8 deinterlacing said interlaced 4:2:0 formatted video signal resulting in a 4:2:0
9 formatted progressive video signal.

1 11. A method of converting interlaced video signals to progressive video signals,
2 said method comprising:
3 a) receiving an interlaced video signal representing a luma component
4 specifying luma lines and a chroma component specifying non-interpolated chroma
5 lines;
6 b) decoding said interlaced video signal and interpolating said non-
7 interpolated chroma lines to produce a processed chroma component specifying
8 interpolated and said non-interpolated chroma lines;

- 9 c) deinterlacing said decoded interlaced video signal based on said luma
10 lines and said non-interpolated chroma lines, whereby said deinterlacing results in a
11 progressive video signal representing a luma component specifying luma lines and a
12 chroma component specifying chroma lines; and
13 d) further processing said progressive video signal.

1 12. The method of claim 11, wherein said step (c) comprises ignoring said
2 interpolated chroma lines.

1 13. The method of claim 11, wherein said step (d) comprises making substantially
2 equal the number of said luma lines and the number of said chroma lines of said
3 progressive video signal.

1 14. The method of claim 13, wherein said step (d) further comprises vertical
2 format converting said progressive video signal for displaying on a display having a
3 vertical resolution different from that of said progressive video signal.

1 15. The method of claim 14, wherein said step (d) further comprises providing
2 said vertical format converted progressive video signal to an imaging system.

1 16. The method of claim 15, wherein said imaging system comprises a liquid
2 crystal on silicon imager.

1 17. The method of claim 15, wherein said imaging system further comprises a
2 high definition television receiver.

1 18. The method of claim 11, wherein said interlaced video signal of said step (a)
2 is a 4:2:0 formatted video signal.

1 19. The method of claim 11, wherein said step (b) results in a 4:2:2 formatted
2 video signal which represents at least in part said processed chroma component
3 specifying alternate said interpolated chroma and said non-interpolated chroma,

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4 such that said processed chroma component includes all of said non-interpolated
5 chroma lines.

1 20. The method of claim 11, wherein said step (c) results in a 4:2:0 formatted
2 video signal.

1 21. The method of claim 20, wherein said step (d) comprises converting said
2 4:2:0 formatted progressive video signal to a 4:2:2 formatted video signal.

1 22. A Moving Picture Experts Group (MPEG) decoder comprising a chroma
2 vertical interpolator configured to receive an interlaced video signal representing a
3 luma component specifying luma lines and a chroma component specifying non-
4 interpolated chroma lines, and to decode said interlaced video signal and interpolate
5 said non-interpolated chroma lines to produce a processed chroma component
6 specifying interpolated and said non-interpolated chroma lines.

1 23. The Moving Picture Experts Group (MPEG) decoder of claim 22, wherein said
2 processed chroma component specifies alternate said interpolated chroma lines and
3 said non-interpolated chroma lines, such that said processed chroma component
4 includes all of said non-interpolated chroma lines.

1 24. A system for converting interlaced Moving Picture Experts Group (MPEG)
2 video signals to progressive video signals, said system comprising:
3 a decoder configured to receive an interlaced video signal representing a
4 luma component specifying luma lines and a chroma component specifying chroma
5 lines, wherein said chroma component specifies approximately one-half the number
6 of lines of said luma component, and to decode said interlaced video signal and
7 increase the number of said chroma lines to approximately the same as the number
8 of said luma lines; and
9 a deinterlacer configured to first decrease the number of said chroma lines of
10 said interlaced video signal back to approximately one-half of the number of said

11 luma lines, whereby said increase of chroma lines is substantially reversed, and then
12 to deinterlace said interlaced video signal.

1 25. The system of claim 24, further comprising:
2 a processor configured to process said deinterlaced video signal for display
3 on a predetermined imager; and
4 a liquid crystal on silicon imager for displaying said deinterlaced video signal.

1 26. The system of claim 24, further comprising:
2 a high definition television receiver configured to further process said
3 deinterlaced video signal.

1 27. A system for converting interlaced Moving Picture Experts Group (MPEG)
2 video signals to progressive video signals, said system comprising:
3 a decoder configured to receive an interlaced video signal representing a
4 luma component specifying luma lines and a chroma component specifying non-
5 interpolated chroma lines, and decode said interlaced video signal and interpolate
6 said non-interpolated chroma lines to produce a processed chroma component
7 specifying interpolated and said non-interpolated chroma lines; and
8 a deinterlacer configured to deinterlace said decoded interlaced video signal
9 based on said luma lines and said non-interpolated chroma lines.

1 28. The system of claim 27, further comprising:
2 a liquid crystal on silicon imager for displaying said deinterlaced video signal.

1 29. The system of claim 27, further comprising:
2 a high definition television receiver having a liquid crystal on silicon imager for
3 displaying said deinterlaced video signal.

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